What is claimed is:

1. An ultrasonic transducer, comprising:

one or more disk-shaped piezoelectric crystals, wherein each piezoelectric crystal has an axial hole;

a tail mass positioned on one side of the piezoelectric crystals, wherein the tail mass includes an axial hole;

a head mass positioned on a side of the piezoelectric crystals opposite the tail mass, wherein the head mass has an internally-threaded axial hole; and

a threaded bolt positioned within the axial hole of each piezoelectric crystal and the axial holes of the tail mass and head mass and threaded into the internally-threaded axial hole of the head mass, wherein the bolt compresses the piezoelectric crystals between the tail mass and head mass;

wherein the head mass includes two pieces composed of different materials, including a threaded sleeve that has said internally-threaded axial hole and has a reduced diameter section and further including an outer housing that is axially outside the reduced diameter section of the threaded sleeve.

2. An ultrasonic transducer as recited in claim 1 wherein the threaded sleeve and the outer housing have mating contact surfaces on a plane perpendicular to an axis of the transducer.

3. An ultrasonic transducer as recited in claim 1 wherein an outer diameter of the reduced diameter section of the threaded sleeve is substantially equal to an inner diameter of the one or more piezoelectric crystals.

4. An ultrasonic transducer as recited in claim 1 wherein the threaded sleeve is composed of titanium.

5. An ultrasonic transducer as recited in claim 1 wherein the threaded sleeve is composed of aluminum.

6. An ultrasonic transducer as recited in claim 1 wherein the outer housing is composed of aluminum.

7. An ultrasonic transducer as recited in claim 1 wherein the outer housing is composed of silicon carbide.

8. An ultrasonic transducer, comprising:

one or more disk-shaped piezoelectric crystals, wherein each piezoelectric crystal has an axial hole;

a tail mass positioned on one side of the piezoelectric crystals, wherein the tail mass includes an axial hole;

a head mass positioned on a side of the piezoelectric crystals opposite the tail mass, wherein the head mass has an internally-threaded axial hole; and

a threaded bolt positioned within the axial hole of each piezoelectric crystal and the axial holes of the tail mass and head mass and threaded into the internally-threaded axial hole of the head mass, wherein the bolt compresses the piezoelectric crystals between the tail mass and head mass;

wherein the head mass includes an outer housing proximal to the piezoelectric transducers and a threaded sleeve distal to the piezoelectric transducers, wherein the outer housing has an axial hole with clearance for the bolt and wherein the threaded sleeve includes the internally-threaded axial hole that mates with threads on the bolt, wherein the outer housing and threaded sleeve are composed of different materials, and wherein the outer housing has a counterbored hole and the threaded sleeve has a sleeve portion that fits inside the counterbored hole of the outer housing.

9. An ultrasonic transducer as recited in claim 8 wherein the threaded sleeve and the outer housing have mating contact surfaces on a plane perpendicular to an axis of the transducer.

10. An ultrasonic transducer as recited in claim 8 wherein an outer diameter of the reduced diameter section of the threaded sleeve is substantially equal to an inner diameter of the one or more piezoelectric crystals.

11. An ultrasonic transducer as recited in claim 8 wherein the threaded sleeve is composed of titanium.

12. An ultrasonic transducer as recited in claim 8 wherein the outer housing is composed of aluminum.

13. An ultrasonic transducer as recited in claim 8 wherein the outer housing is composed of silicon carbide.

14. An ultrasonic transducer, comprising:

one or more disk-shaped piezoelectric crystals, wherein each piezoelectric crystal has an axial hole having an inner diameter;

a tail mass positioned on one side of the piezoelectric crystals, wherein the tail mass includes a threaded portion disposed within the inner diameter of the piezoelectric crystals;

a head mass positioned on a side of the piezoelectric crystals opposite the tail mass, wherein the head mass includes a threaded portion disposed within the inner diameter of the piezoelectric crystals, and wherein the threaded portions of the tail mass and head mass engage and compress the piezoelectric crystals between the tail mass and head mass.

15. An ultrasonic transducer as recited in claim 14 wherein the head mass and tail mass are composed of titanium.

16. An ultrasonic transducer as recited in claim 14 further comprising an annular disk of silicon carbide positioned between the piezoelectric crystals and the head mass.

17. An ultrasonic transducer as recited in claim 14 further comprising an annular disk of aluminum oxide positioned between the piezoelectric crystals and the tail mass.

18. An ultrasonic transducer, comprising:

one or more disk-shaped piezoelectric crystals, wherein each piezoelectric crystal has an axial hole;

a tail mass positioned on one side of the piezoelectric crystals, wherein the tail mass includes an axial hole;

a head mass positioned on a side of the piezoelectric crystals opposite the tail mass, wherein the head mass has an internally-threaded axial hole; and

a threaded bolt positioned within the axial hole of each piezoelectric crystal and the axial holes of the tail mass and head mass and threaded into the internally-threaded axial hole of the head mass, wherein the bolt compresses the piezoelectric crystals between the tail mass and head mass;

wherein the head mass includes a threaded sleeve proximal to the piezoelectric transducers and an outer housing distal to the piezoelectric transducers, wherein the threaded sleeve includes the internally-threaded axial hole that mates with threads on the bolt, wherein the threaded sleeve and outer housing are composed of different materials, and wherein the outer housing has an axial hole and the threaded sleeve has a sleeve portion that fits inside the axial hole of the outer housing.

19. An ultrasonic transducer as recited in claim 18 wherein the threaded sleeve and the outer housing have mating contact surfaces on a plane perpendicular to an axis of the transducer.

20. An ultrasonic cleaning system as recited in claim 18 wherein the threaded sleeve and outer housing are bonded together using an epoxy with a ceramic filler.

21. An ultrasonic cleaning system as recited in claim 20 wherein the ceramic filler is aluminum oxide.

22. An ultrasonic cleaning system as recited in claim 20 wherein the epoxy is a polymer adhesive Supreme 10AOHT.

23. An ultrasonic transducer as recited in claim 18 wherein an outer diameter of the reduced diameter section of the sleeve portion of the threaded sleeve is substantially equal to an inner diameter of the one or more piezoelectric crystals.

24. An ultrasonic transducer as recited in claim 18 wherein the threaded sleeve is composed of titanium.

25. An ultrasonic transducer as recited in claim 18 wherein the threaded sleeve is composed of aluminum.

26. An ultrasonic transducer as recited in claim 18 wherein the outer housing is composed of silicon carbide.